

FORM PTO-1449

## SIXTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Page 1 of 7

ATTY. DOCKET NO.  
2005.0020003APPLICATION NO.  
09/604,097APPLICANTS  
Yukio SHAKUDAFILING DATE  
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2828

## FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AA						
	AB						
<i>7N</i>	AC40	2500319 B2	05/1996	JP			Abstract Enclosed
<i>1</i>	AD40	2556211 B2	11/1996	JP			Abstract Enclosed

## OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

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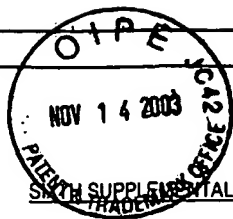
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
TN	AA41	2587825 B2	03/1997	JP			Abstract Enclosed
	AB41	2623463 B2	06/1997	JP			Abstract Enclosed
	AC41	2623466 B2	06/1997	JP			Abstract Enclosed
	AD41	2631285 B2	07/1997	JP			Abstract Enclosed

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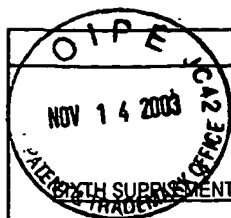
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
TN	AA42	2631286 B2	07/1997	JP			Abstract Enclosed
	AB42	2666228 B2	10/1997	JP			Abstract Enclosed
	AC42	2728190 B2	03/1998	JP			Abstract Enclosed
	AD42	2740818 B2	04/1998	JP			Abstract Enclosed

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
TN	AA43	2748355 B2	05/1998	JP			Abstract Enclosed
	AB43	2751987 B2	05/1998	JP			Abstract Enclosed
	AC43	2790237 B2	08/1998	JP			Abstract Enclosed
	AD43	2812375 B2	10/1998	JP			Abstract Enclosed

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TV	AA44	2818776 B2	10/1998	JP			Abstract Enclosed
	AB44	2829311 B2	11/1998	JP			Abstract Enclosed
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	AD44	2849642 B2	01/1999	JP			Abstract Enclosed

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
TN	AA45	2895566 B2	05/1999	JP			Abstract Enclosed
	AB45	2914014 B2	06/1999	JP			Abstract Enclosed
	AC45	2914065 B2	06/1999	JP			Abstract Enclosed
	AD45	2917742 B2	07/1999	JP			Abstract Enclosed

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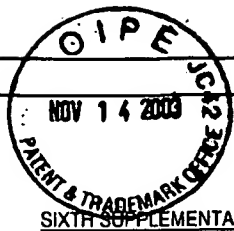
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TN	AA46	2947047 B2	09/1999	JP			Abstract Enclosed
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1 N	AA1	57-153479 A	09/1982	JP			Abstract Enclosed
	AB1	57-155793 A	09/1982	JP			Abstract Enclosed
	AC1	62-119196 A	05/1987	JP			Abstract Enclosed
	AD1	62-165948 A	07/1987	JP			Abstract Enclosed

## OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AE1	Ando, T., "Self-Consistent Results for a GaAs/Al <sub>x</sub> Ga <sub>1-x</sub> As Heterojunction. I. Subband Structure and Light Scattering Spectra", <i>J. Phys. Soc. Jpn.</i> 51, pp. 3893-3899 (1982).
	AF1	Ando, T., "Self-Consistent Results for a GaAs/Al <sub>x</sub> Ga <sub>1-x</sub> As Heterojunction. II. Low Temperature Mobility", <i>J. Phys. Soc. Jpn.</i> 51, pp. 3900-3907 (1982).
	AG1	Ando, T. and Mori, S., "Effective-Mass Theory of Semiconductor Heterojunctions and Superlattices," <i>Surf. Sci.</i> 113, pp. 124-130 (1982).
	AH1	Hedin, L. and Lundqvist, B.I., "Explicit local exchange-correlation potentials," <i>J. Phys. C: Solid St. Phys.</i> , Vol. 4, pp. 2064-2082 (1971).
	AI1	Ploog, K., "Molecule Beam Epitaxy of Artificially Layered III-V Semiconductors: Ultrathin-Layer (GaAs) <sub>m</sub> (AlAs) <sub>m</sub> Superlattices and Delta (δ-) Doping in GaAs", <i>Physica Scripta</i> , Vol. T19, pp. 136-146 (1987).
	AJ1	Ploog, K., "Delta- (δ-) Doping In MBE-Grown GaAs: Concept and Device Application," <i>Journal of Crystal Growth</i> 81, North-Holland, pp. 304-313 (1987).
	AK1	Ogawa, M. and Baba, T., "Heavily Si-Doped GaAs and AlAs/n-GaAs Superlattice Grown by Molecular Beam Epitaxy," <i>Japanese Journal of Applied Physics</i> , Vol. 24, No. 8, pp. L572-L574 (August 1995).

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TN	AA2	63-188977 A	08/1988	JP			Abstract Enclosed
	AB2	63-222488 A	09/1988	JP			Abstract Enclosed
	AC2	63-222489 A	09/1988	JP			Abstract Enclosed
	AD2	1-14717 B2	03/1989	JP			Abstract Enclosed

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	AE2	Sasa, S. <i>et al.</i> , "Si Atomic-Planar-Doping in GaAs Made by Molecular Beam Epitaxy," <i>Japanese Journal of Applied Physics</i> , Vol. 24, No. 8, pp. L602-L604 (August 1995).
	AF2	Yao, T. <i>et al.</i> , "The effects of substrate temperature on the donor ionization energy and on the material properties of selectively doped short-period GaAs:Si/AlAs superlattices," <i>J. Appl. Phys.</i> 62(5), American Institute of Physics, pp. 1925-1930 (September 1, 1987).
	AG2	Horikoshi, Y. <i>et al.</i> , "High-Mobility Two-Dimensional Electron Gas from Delta-Doped Asymmetric Al <sub>0.3</sub> Ga <sub>0.7</sub> As/GaAs/Al <sub>0.3</sub> Ga <sub>0.7</sub> As Quantum Wells," <i>Japanese Journal of Applied Physics</i> , Vol. 26, No. 2, pp. 263-266 (February 1987).
	AH2	Ploog, K. <i>et al.</i> , "Improved electron mobility by AlAs spacer in one-sided selectively doped Al <sub>0.3</sub> Ga <sub>0.7</sub> As/GaAs multiple quantum well heterostructures," <i>Appl. Phys. Lett.</i> 50(18), American Institute of Physics, pp. 1237-1239 (May 4, 1987).
	AI2	Ploog, K., "GaAs Doping Superlattices A New Class of Semiconductor Materials Grown by Molecular Beam Epitaxy," <i>Collected Paper of MBE-CST-2</i> , Tokyo, pp. 17-20 (1982).
	AJ2	Theis, T.N. and Wright, S.L., "Origin of 'residual' persistent photoconductivity in selectively doped GaAs/Al <sub>0.3</sub> Ga <sub>0.7</sub> As heterojunctions," <i>Appl. Phys. Lett.</i> 48 (20), American Institute of Physics, pp. 1374-1376 (May 19, 1986).
	AK2	Hiyamizu, S. <i>et al.</i> , "A New Heterostructure for 2DEG System with a Si Atomic-Planar-Doped AlAs-GaAs-AlAs Quantum Well Structure Grown by MBE," <i>Japanese Journal of Applied Physics</i> , Vol. 24, No. 6, pp. L431-L433 (June 1985).

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
TN	AA3	1-204425 A	08/1989	JP			Abstract Enclosed
	AB3	2-229476 A	09/1990	JP			Abstract Enclosed
	AC3	2-291125 A	11/1990	JP			Abstract Enclosed
	AD3	3-80198 A	04/1991	JP			Abstract Enclosed

## OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AE3	Baba, T. <i>et al.</i> , "AlAs/n-GaAs superlattice and its application to high-quality two-dimensional electron gas systems," <i>J. Appl. Phys.</i> 59 (2), American Institute of Physics, pp. 526-532 (January 15, 1986).
	AF3	Street, R.A. <i>et al.</i> , "Luminescence of <i>n-i-p-i</i> heterostructures," <i>Physical Review B</i> , Vol. 33, No. 10, pp. 7043-7046 (May 15, 1986).
	AG3	Schubert, E.F. and Ploog, K., "Interpretation of Capacitance-Voltage Profiles from Delta-Doped GaAs Grown by Molecular Beam Epitaxy," <i>Japanese Journal of Applied Physics</i> , Vol. 25, No. 7, pp. 966-970 (July 1986).
	AH3	Nishikawa, Y. <i>et al.</i> , "MOCVD Growth Of InGaAlP Using Ethyldimethylindium As An In Source And Application To Visible-Region Lasers," <i>Journal of Crystal Growth</i> 104, Elsevier Science Publishers B.V., pp. 245-249 (1990).
	AI3	Miller, L.M. <i>et al.</i> , "Characteristics of step-graded separate confinement quantum well lasers with direct and indirect barriers," <i>J. Appl. Phys.</i> 68 (5), American Institute of Physics, pp. 1964-1967 (September 1, 1990).
	AJ3	Sawada, T. and Majerfeld, A., "Carrier Concentration and Composition Profiling for GaAs/AlGaAs Laser Diodes," <i>Bulletin of the Faculty of Engineering, Hokkaido University</i> , No. 133, pp. 59-72 (1986).
	AK3	LePore, J.J., "An improved technique for selective etching of GaAs and Ga <sub>1-x</sub> Al <sub>x</sub> As," <i>J. Appl. Phys.</i> 51 (12), American Institute of Physics, pp. 6441-6442 (December 1980).

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TN	AA4	3-31678 B2	05/1991	JP			Abstract Enclosed
	AB4	3-252176 A	11/1991	JP			Abstract Enclosed
	AC4	3-252177 A	11/1991	JP			Abstract Enclosed
	AD4	3-252178 A	11/1991	JP			Abstract Enclosed

## OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AE4	Sandroff, C.J. <i>et al.</i> , "Dramatic enhancement in the gain of a GaAs/AlGaAs heterostructure bipolar transistor by surface chemical passivation," <i>Appl. Phys. Lett.</i> 51 (1), American Institute of Physics, pp. 33-35 (July 6, 1987).
AF4	Takado, N. <i>et al.</i> , "Chemically enhanced focused ion beam etching of deep grooves and laser-mirror facets in GaAs under Cl <sub>2</sub> gas irradiation using a fine nozzle," <i>Appl. Phys. Lett.</i> 50(26), American Institute of Physics, pp. 1891-1893 (June 29, 1987).
AG4	Ohba, Y. and Hatano, A., "H-Atom Incorporation in Mg-Doped GaN Grown by Metalorganic Chemical Vapor Deposition," <i>Jpn. J. Appl. Phys.</i> , Vol. 33, Part 2, No. 10A, pp. L1367-L1369 (October 1, 1994).
AH4	Olszakier, M. <i>et al.</i> , "Photoinduced Intersubband Absorption in Undoped Multi-Quantum-Well Structures," <i>Physical Review Letters</i> , Vol. 62, No. 25, pp. 2997-3000 (June 19, 1989).
AI4	Seilmeier, A. <i>et al.</i> , "Direct Observation of Intersubband Relaxation in Narrow Multiple Quantum Well Structures," <i>Solid-State Electronics</i> , Vol. 31, No. 3/4, Pergamon Journals Ltd., pp. 767-770 (1988).
AJ4	Yang, C. and Pan, D., "Intersubband absorption of silicon-based quantum wells for infrared imaging," <i>J. Appl. Phys.</i> 64(3), American Institute of Physics, pp. 1573-1575 (August 1, 1988).
AK4	Andersson, J.Y. and Landgren, G., "Intersubband transitions in single AlGaAs/GaAs quantum wells studied by Fourier transform infrared spectroscopy," <i>J. Appl. Phys.</i> 64(8), American Institute of Physics, pp. 4123-4127 (October 15, 1988).

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	AB5	4-15200 B2	03/1992	JP			Abstract Enclosed
	AC5	4-163968 A	06/1992	JP			Abstract Enclosed
	AD5	4-163970 A	06/1992	JP			Abstract Enclosed

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	AE5	Goldberg, B.B. <i>et al.</i> , "Inelastic Light Scattering Of Valence Subband Transitions In GaAs/GaAlAs Multiple Quantum Wells," <i>Surface Science</i> 196, Elsevier Science Publishers B.V., pp. 619-625 (1988).
	AF5	Julien, F.H. <i>et al.</i> , "Optical saturation of intersubband absorption in GaAs-Al <sub>x</sub> Ga <sub>1-x</sub> As quantum wells," <i>Appl. Phys. Lett.</i> 53(2), American Institute of Physics, pp. 116-118 (July 11, 1988).
	AG5	Goossen, K.W. <i>et al.</i> , "Conduction-band offset determination in GaAs-Al <sub>x</sub> Ga <sub>1-x</sub> As through measurement of infrared internal photoemission," <i>Physical Review B</i> , Vol. 36, No. 17, The American Physical Society, pp. 9370-9373 (December 15, 1987).
	AH5	Kastalsky, A. <i>et al.</i> , "Photovoltaic detection of infrared light in a GaAs/AlGaAs superlattice," <i>Appl. Phys. Lett.</i> 52(16), American Institute of Physics, pp. 1320-1322 (April 18, 1988).
	AI5	Bäuerle, R.J. <i>et al.</i> , "Picosecond infrared spectroscopy of hot carriers in a modulation-doped Ga <sub>0.47</sub> In <sub>0.53</sub> As multiple-quantum-well structure," <i>Physical Review B</i> , Vol. 38, No. 6, The American Physical Society, pp. 4307-4310 (August 15, 1988).
	AJ5	Seilmeier, A. <i>et al.</i> , "Intersubband Relaxation in GaAs-Al <sub>x</sub> Ga <sub>1-x</sub> As Quantum Well Structures Observed Directly by an Infrared Bleaching Techniques," <i>Physical Review Letters</i> , Vol. 59, No. 12, The American Physical Society, pp. 1345-1348 (September 21, 1987).
	AK5	Abstreiter, G. <i>et al.</i> , "Electronic Excitations In Narrow GaAs/Al <sub>x</sub> Ga <sub>1-x</sub> As Quantum Well Structures," <i>Surface Sciences</i> 196, Elsevier Science Publishers B.V., pp. 613-618 (1988).

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TN	AA6	4-163971 A	06/1992	JP			Abstract Enclosed
	AB6	4-164895 A	06/1992	JP			Abstract Enclosed
	AC6	4-170390 A	06/1992	JP			Abstract Enclosed
	AD6	4-247637 A	09/1992	JP			Abstract Enclosed

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	AE6	Seilmeier, A. <i>et al.</i> , "Picosecond Intersubband Spectroscopy," <i>Superlattices and Microstructures</i> , Vol. 5, No. 4, Academic Press Limited, pp. 569-574 (1989).
	AF6	Kane, M.J. <i>et al.</i> , "Intersubband Absorption and Infrared Modulation in GaAs/AlGaAs Single Quantum Wells," <i>Superlattices and Microstructures</i> , Vol. 5, No. 4, Academic Press Limited, pp. 587-589 (1989).
	AG6	Asai, H. <i>et al.</i> , "Structure Dependence of Intersubband Absorption in InGaAs/InAlAs Multiquantum Wells," 6 pages.
	AH6	Zhou, X. <i>et al.</i> , "Intersubband absorption in strained $\text{In}_{0.4}\text{Ga}_{0.6}\text{As}/\text{Al}_{0.4}\text{Ga}_{0.6}\text{As}$ ( $0 < x < 0.15$ ) multiquantum wells," <i>Appl. Phys. Lett.</i> 54(9), American Institute of Physics, pp. 855-856 (February 27, 1989).
	AI6	Rosencher, E. <i>et al.</i> , "Observation of nonlinear optical rectification at 10.6 $\mu\text{m}$ in compositionally asymmetrical AlGaAs multiquantum wells," <i>Appl. Phys. Lett.</i> 55(16), American Institute of Physics, pp. 1597-1599 (October 16, 1989).
	AJ6	Fejer, M.M. <i>et al.</i> , "Observation of Extremely Large Quadratic Susceptibility at 9.6-10.8 $\mu\text{m}$ in Electric-Field-Biased AlGaAs Quantum Wells," <i>Physical Review Letters</i> , Vol. 62, No. 9 The American Physical Society, pp. 1041-1044 (February 27, 1989).
	AK6	Walrod, D. <i>et al.</i> , "Optical nonlinearities due to subband structures in $\text{Al}_{0.08}\text{In}_{0.92}\text{Sb}/\text{InSb}$ superlattices," <i>Appl. Phys. Lett.</i> 56(3), American Institute of Physics, pp. 218-220 (January 15, 1990).

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2005.0020003APPLICATION NO.  
09/604,097APPLICANTS  
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2828

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	AC7	4-321279 A	11/1992	JP			Abstract Enclosed
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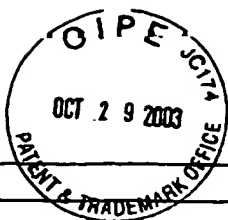
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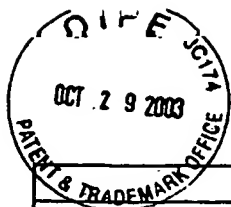
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Not Examined

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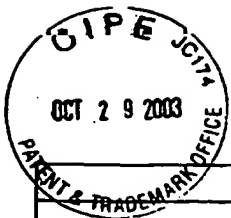
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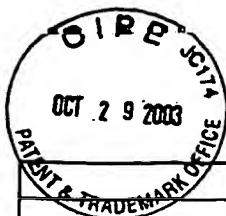
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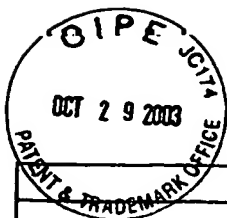
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2828

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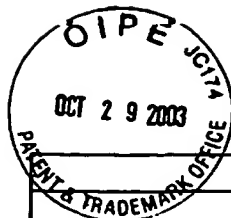
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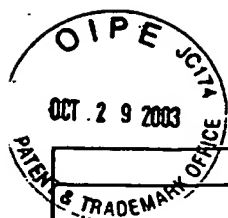
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2828

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2828

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FORM PTO-1449

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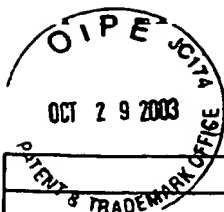
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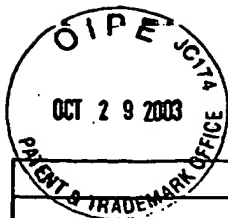
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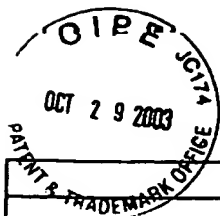
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## FIFTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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I	AB40	0 541 373 B1	09/1998	EP			N/A
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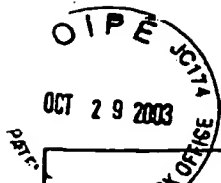
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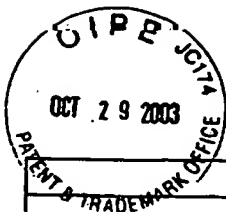
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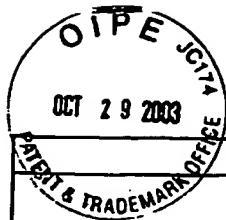
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	AE45	Pearton, S.J. <i>et al.</i> , "Ar <sup>+</sup> -ion milling characteristics of III-V nitrides," <i>J. Appl. Phys.</i> 76(2), American Institute of Physics, pp. 1210-1215 (July 15, 1994).
	AF45	Pearton, S.J. <i>et al.</i> , "Letter to the editor: Dry etching of thin-film InN, AlN and GaN," <i>Semicond. Sci. Technol.</i> 8, pp. 310-312 (1993).
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	AK45	Self, K., "Prolog to Emerging Gallium Nitride Based Devices," <i>Proceedings Of The IEEE</i> , Vol. 83, No. 10, p. 1305 (October 1995).

EXAMINER

DATE CONSIDERED

2/27/04

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June 27, 2000GROUP  
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## FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AA46						
	AB46						
	AC46						
	AD46						

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	AE46	Mohammad, S.N. <i>et al.</i> , "Emerging Gallium Nitride Based Devices," <i>Proceedings of the IEEE</i> , Vol. 83, No. 10, pp. 1306-1355 (October 1995).
	AF46	Goldenberg, B. <i>et al.</i> , "Ultraviolet and violet light-emitting GaN diodes grown by low-pressure metalorganic chemical vapor deposition," <i>Appl. Phys. Lett.</i> 62(4), American Institute of Physics, pp. 381-383 (January 25, 1993).
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	AK46	Abernathy, C.R., "The Role of Hydrogen In UHV Growth of III-V Semiconductors," <i>Materials Science Forum</i> , Vols. 148-149, Trans Tech Publications, pp. 3-25 (1994).

Not Examined

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	AA47						
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	AE47	Wetzel, C. <i>et al.</i> , "Excitation Spectroscopy and Level Assignment in Piezoelectric Ga <sub>1-x</sub> In <sub>x</sub> N/GaN Quantum Wells," 2 pages.
	AF47	Matsuoka, T. <i>et al.</i> , "Wide-Gap Semiconductor InGaN and InGaAlN Grown by MOVPE," <i>Journal of Electronic Materials</i> , Vol. 21, No. 2, pp. 157-163 (1992).
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